

CLAIMS

I Claim:

Claim 1 - A method for dissolving a powdery substance stored in an ampule having a first coupler defining the outlet and which has been sealed by occluding the first coupler outlet with a first cap, where a needleless syringe or cannula is configured with a second coupler and an opening which communicates within an interior cylindrical hollow of the syringe so that fluid passes by the second coupler through the opening and into the cylindrical hollow and fills the syringe or cannula, the steps including:

providing a vial which has been filled with a fluid, which has a vial outlet including a third coupler defining the vial outlet and which has been sealed by occluding the third coupler of the vial outlet with a second cap;

subsequently removing the second cap from the vial;

orienting the second and third couplers of the syringe or cannula and vial, respectively into complementary, fluid-tight locking engagement so that the opening of the vial registers with the opening of the syringe or cannula;

transferring the contents of the vial to the syringe or cannula;

subsequently removing the first cap from the ampule;

orienting the first coupler of the ampule with second coupler of the syringe or cannula into complementary, fluid-tight locking engagement so that the opening of the ampule registers with the opening of the syringe or cannula;

transferring the fluid of the syringe into the ampule;

mixing the powdery substance and fluid until the powdery substance is dissolved thus making a mixture while the ampule and syringe or cannula remain mated;

conveying the mixture back into the syringe or cannula; and

preparing the syringe or cannula for the capability of inserting the mixture into an animate or inanimate object.

Claim 2 - The method of claim 1 wherein transferring the contents from the vial includes the steps of compressing walls of the vial after the second and third couplers are docked in complemental fluid tight locking engagement,

whereby an increase in fluid pressure from compressing walls of the vial forces fluid out of the vial.

Claim 3 - The method of claim 1 wherein conveying the contents from the ampule back to the syringe or cannula includes the steps of compressing walls of the vial after the first and second couplers are docked in complemental fluid tight locking engagement,

whereby an increase in fluid pressure from compressing walls of the vial forces fluid out of the vial.

Claim 4 - The method of claim 2 wherein conveying the contents from the ampule back to the syringe or cannula includes the steps of compressing walls of the vial after the first and second couplers are docked in complemental fluid tight locking engagement,

whereby an increase in fluid pressure from compressing walls of the vial forces fluid out of the vial.

Claim 5 - The method of claim 1 wherein said transferring step includes retracting a plunger which had been housed within the cylindrical hollow of the syringe so that the plunger retraction creates a negative pressure in the syringe which is transferred into the vial so that fluid within the vial is drawn into the syringe while collapsing walls of the vial.

Claim 6 - The method of claim 1 wherein said conveying step includes retracting a plunger which had been housed within the cylindrical hollow of the syringe so that the plunger retraction creates a negative pressure in the syringe which is transferred into the vial so that fluid within the vial is drawn into the syringe while collapsing walls of the vial.

Claim 7 - The method of claim 5 wherein said conveying step includes retracting a plunger which had been housed within the cylindrical hollow of the syringe so that the plunger retraction creates a negative pressure in the syringe which is transferred into the vial so that fluid within the vial is drawn into the syringe while collapsing walls of the vial.

Claim 8 - The method of claim 1 including dissociating the first and second couplers after the mixture in the ampule has been transferred to the syringe or cannula and taking the cap from the vial and sealing the second coupler of the syringe with the cap from the vial or ampule.

Claim 9 - The method of claim 2 including dissociating the first and second couplers after the mixture in the ampule has been transferred to the syringe or cannula and taking the cap from the vial and sealing the second coupler of the syringe with the cap from the vial or ampule.

Claim 10 - The method of claim 5 including dissociating the first and second couplers after the mixture in the ampule has been transferred to the syringe or cannula and taking the cap from the vial and sealing the second coupler of the syringe with the cap from the vial or ampule.

Claim 11 - The method of claim 3 including dissociating the first and second couplers after the mixture of the ampule has been transferred to the syringe or cannula and taking the cap from the vial and sealing the second coupler of the syringe with the cap from the vial or ampule.

Claim 12 - The method of claim 6 including dissociating the first and second couplers after the mixture of the ampule has been transferred to the syringe or cannula and taking the cap from the vial and sealing the second coupler of the syringe with the cap from the vial or ampule.

Claim 13 - The method of claim 1 including standing the filled syringe on the cap.

Claim 14 - A method for forming an ampule to transfer pharmaceutical grade fluid or solid to be administered, the steps including:

forming an ampule with resilient walls so that the ampule can be collapsed and creating an orifice to pass the pharmaceutical grade fluid or solid;

forming an opening on the ampule such that the opening is circumscribed by a coupler which is to be complementally fastened to receive a dose administering device;

filling the ampule with the pharmaceutical grade fluid or solid; and
sealing the ampule.

Claim 15 - The method of claim 14 including sterilizing the pharmaceutical grade fluid and the ampule.

Claim 16 - The method of claim 14 including providing a scoreline at the opening of the ampule which has been occluded by capping the ampule opening so that the opening and the contents of the ampule can be accessed by severing the cap from the ampule at the scoreline.

Claim 17 - The method of claim 16 including after filling the ampule with pharmaceutical fluid making the ampule with an end wall and side walls with the side walls extending from the end wall to define a blind bore and making the side walls of the ampule resilient so that the side walls can be distorted to force the fluid within the ampule out of the opening once the cap has been severed.

Claim 18 - The method of claim 17 including forming the cap on the ampule with an interior passageway having a dimension complementary to an outlet of a syringe or needleless cannula for frictional engagement thereover after having transferred a mixture from the ampule to the syringe or needleless cannula.

Claim 19 - The method of claim 18 further including providing a diverging portion on the ampule immediately adjacent its opening so that a luer-type taper on the syringe or cannula can be used to frictionally reside within the ampule for docking when transferring fluid from the ampule to the syringe or cannula.

Claim 20 - The method of claim 19 including providing a tab surface on the cap and including indicia on the tab correlative of the mixture within the ampule to provide an indicator of the contents within the ampule.

Claim 21 - The method of claim 16 including forming the cap on the ampule with an interior passageway having a dimension complementary to an outlet of a

syringe or cannula for frictional engagement thereover after having transferred a mixture from the ampule to the syringe or cannula.

Claim 22 - The method of claim 14 further providing a diverging portion on the ampule immediately adjacent its opening so that a luer-type taper on the syringe or cannula can be used to frictionally reside within the ampule for docking when transferring a mixture from the ampule to the syringe or cannula.

Claim 23 - The method of claim 16 including providing a tab surface on the cap and including indicia on the tab correlative of a mixture within the ampule to provide an indicator of the contents within the ampule.

Claim 24 - A needleless dosage transfer system, for removing a sterile pharmaceutical grade fluid from a sealed ampule to a needleless syringe or needleless cannula, comprising in combination,

an ampule defined by an end and collapsible side walls extending from said end thereby defining a blind bore and an open end,

said side walls formed from resilient, collapsible material,

a coupler at said open end of said vial, and a removable cap occluding said open end,

said coupler configured and provided with means to connect to an opening of the syringe or cannula in fluid communication therewith, whereby fluid can be directly transferred from the ampule without an interconnecting needle after removing said cap and coupling said opening to the needleless syringe or cannula.

Claim 25 - The system of claim 24 wherein said coupler at said open end of said ampule includes a converging portion as it extends from said ampule to said coupler open end.

Claim 26 - The system of claim 24 wherein said opened end is integrally formed with said cap and is dissociated from said removable cap by means of a scoreline formed on said ampule associated at said opening.

Claim 27 - The system of claim 26 wherein said removable cap includes an interior passageway having a diverging passageway substantially symmetrical to the said converging portion of said ampule adjacent said opening so that an axis of symmetry is provided at said scoreline with respect to said converging and diverging portions.

Claim 28 - The system of claim 24 wherein said cap includes indicia means on an exterior surface thereof correlative with the fluid within said ampule.

Claim 29 - The system of claim 27 wherein said passageway of said removable cap is dimensioned to frictionally override an opening of said needleless syringe or cannula which had been used to receive the fluid from the ampule whereby indicia on said removable cap travels with the needleless syringe or cannula correlative of the fluid within said syringe which heretofore had been in said ampule.

Claim 30 - The system of claim 24 wherein said cap includes a foot with facets at a perimeter thereof which provides a sterile support and prevents rolling of said cap and any devices connected thereto when placed horizontally on a flat surface.

Claim 31 - An ampule for storing a pharmaceutical product in a manner to inhibit lability of the product and permitting the transfer of the product in an aseptic manner to avoid nosocomial infection from ambient air comprising:

resilient walls that can be collapsed and creating an orifice to pass a pharmaceutical grade fluid or solid therethrough;

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an opening on said ampule whereby the opening is circumscribed by a coupler which is to be complementally fastened to receive a dose administering device.

Claim 32 - The ampule of claim 31 further including a cap for occluding said opening.

Claim 33 - The ampule of claim 32 further providing a scoreline proximate said opening whereby any contents within said ampule can be accessed by severing said cap for said ampule at said scoreline.

Claim 34- The ampule of claim 31 whereupon after passing a pharmaceutical grade fluid or solid through said orifice, sealing the orifice to form an end wall whereby said side walls extend from said end wall to define a blind bore and making said side walls so that said side walls can be distorted to force said fluid or solid within the ampule out said opening once said cap has been severed.

Claim 35 - The ampule of claim 32 whereby said cap is formed with an interior passageway having a dimension complementary to an outlet of a syringe or cannula for frictional engagement thereover after having transferred a mixture from said ampule to a syringe or cannula.

Claim 36 - The ampule of claim 31 wherein said cap has a tab surface.

Claim 37 - The ampule of claim 36 wherein said tab surface includes indicia thereon correlative of a mixture within the ampule.

Claim 38 - The ampule of claim 37 wherein said indicia provides an indicator of the contents within the ampule.

Claim 39 - A filter cartridge of an ampule comprising:

a body having first and second coupling-ends and a filter disposed therebetween;

whereby said first coupling-end includes a female luer-type tapering for frictional engagement with a needleless syringe or cannula; and

whereby said second coupling-end includes a male luer-type tapering for frictional engagement with a female luer-type taper on a needle or cannula.

Claim 40 - The filter cartridge of claim 39 integral with an ampule for storing a pharmaceutical product in a manner to inhibit lability of the product and permitting the transfer of the product in an aseptic manner to avoid nosocomial infection from ambient air comprising:

resilient walls that can be collapsed and creating an orifice to pass a pharmaceutical grade fluid or solid therethrough;

an opening on said ampule whereby the opening is circumscribed by a coupler which is to be complementally fastened to receive a dose administering device.

Claim 41 - The system of claim 24 including a filtered needle.

Claim 42 - The system of claim 25 including a filtered needle.

Claim 43 - The system of claim 26 including a filtered needle.

Claim 44 - The system of claim 27 including a filtered needle.

Claim 45 - The system of claim 28 including a filtered needle.

Claim 46 - The system of claim 29 including a filtered needle.

Claim 47 - The system of claim 30 including a filtered needle.